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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
2167	

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>26 November 2002</u> .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-24</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-24</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ . 6) ☐ Other: .

DETAILED ACTION

1.   In view of the Remand received from the Board of Patent Appeals and

interferences on 7/02/2004 and in consultation with QAS, PROSECUTION IS HEREBY

REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the

following two options:

(1) file a reply under 37 CFR 1.111 since this Office action is non-final; or,

(2) request reinstatement of the appeal.

2.   If reinstatement of the appeal is requested, such request must be accompanied

by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130,

1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

3.   In this Office Action, claims 1-24 are pending.

Oath/Declaration

4.   A new oath or declaration is required because of non-initialed alteration is seen.

The wording of an oath or declaration cannot be amended. If the wording is not correct

or if all of the required affirmations have not been made or if it has not been properly

subscribed to, a new oath or declaration is required. The new oath or declaration must

properly identify the application of which it is to form a part, preferably by application

number and filing date in the body of the oath or declaration. See MPEP §§ 602.01 and

602.02.

Claim Rejections - 35 USC § 101

5.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent therefor,
> subject to the conditions and requirements of this title.

6.   Claims 8-14, 23 are rejected under 35 U.S.C. 101, because independent claim 8

is directed to a computer program product including a program of instructions, which is

a non-statutory subject matter.

As per independent claim 8, the preamble recites "A computer program product

including a program of instructions" as drafted said claim is not technologically

embodied on a computer readable medium (See *In re Waldbaum*, 173 USPQ 430

(CCPA 1972); *In re Musgrave*, 167 USPQ 280 (CCPA 1970) and *In re Johnston*,

183 USPQ 172 (CCPA 1974) also see MPEP 2106 IV 2(b), even though said

claim is limited to a useful, concrete and tangible application (See *State Street v.*

Signature financial Group, 149 F.3d at 1374-75, 47 USPQ 2nd at 1602 (Fed Cir.

1998); AT&T Corp. V. Excel, 50 USPQ 2nd 1447, 1452 (Fed. Cir. 1999).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as
> set forth in section 102 of this title, if the differences between the subject matter sought to be patented
> and the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the claims
> under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was
> commonly owned at the time any inventions covered therein were made absent any evidence to the
> contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and
> invention dates of each claim that was not commonly owned at the time a later invention was made in
> order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e),
> (f) or (g) prior art under 35 U.S.C. 103(a).

8.   Claims 1-4, 8-12, 15-18, 22-24 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Fayyad et al. (US Patent 6,263,334) and in view of "Coordinate

Systems in Two and Three Dimensions", (Department of Mathematics, Oregon

University, 1996).

9.   As per independent claims 1, 8 and 15, Fayyad teaches the following:

"for at least some data vectors in a data space, generating respective

approximations in polar coordinates." Approximation is interpreted as probability

function at Figs. 7 & 8, col. 7, lines 55-67 to col. 8, lines 1-14.

"based on the approximations, returning "k" nearest neighbors to the query." at

Figs. 2B, col. 4, lines 55-67 to col. 5, lines 1-3.

Fayyad does not teach explicitly polar coordinates. However, Oregon University

teaches converting Cartesian to Polar coordinates and vice versa (figure, page 1,

paragraph "Polar Coordinates"). Thus, it would have been obvious to one of

ordinary skill in the data processing art at the time of the invention to incorporate

the teachings of the cited references because the process of converting

Cartesian to Polar coordinates by Oregon University's would have provided

Fayyad's with necessary method, which is convenient to use a Polar coordinate

system (see Oregon University, page 1, paragraph "Introduction"). Further, by

combining Oregon University conversion method would have allowed Fayyad's

method to use polar coordinate system because easy and convenient to use in

which circular, cylindrical or spherical symmetry is present (see Oregon

university, page 1, paragraph "Introduction").

10.   As per dependent claims 2, 10 and 16, Fayyad teaches the following:

"dividing the data space into plural cells" at Fig. 3A, col. 5, lines 4-8;

"representing at least one data point in at least one cell in polar coordinates with

respect to the at least one cell." at Fig. 3B, col. 5, lines 19-31;

11.   As per dependent claims 3, 11 and 17, Fayyad teaches the following:

"determining a number of "b" bits to be assigned to each cell." at Fig. 4D, col. 7,

lines 1-17;

"dividing the data space into 2bd cells." at Fig. 4D, col. 7, lines 23-36.

12.   As per dependent claims 4 and 18, Fayyad teaches "generating a candidate set

of approximations based at least on the lower bounds dmin of the approximations" at

Fig. 9A, col. 12, lines 46-54.

13.   As per dependent claim 9, Fayyad teaches "the means for generating generates

respective approximations of data vectors p in local polar coordinates." at Fig. 2, col. 8,

lines 35-43.

14.   As per dependent claim 12, Fayyad teaches "computer readable code means for

generating a candidate set of approximations based at least on the lower bounds dmin

and upper bounds dmax of the approximations. at Fig. 9A, col. 12, lines 46-59.

15.   As per dependent claims 22, 23 and 24, Fayyad teaches "generating a candidate

set of approximations based at least on the upper bounds dmax of the approximations."

at Fig. 9A, col. 13, lines 7-10.

16.   Claims 5-7, 13-14, 19-21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Fayyad et al. (US Patent 6,263,334) and in view of "Coordinate

Systems in Two and Three Dimensions", (Department of Mathematics, Oregon

University, 1996) and further in view of Staats (US Patent 5,619,717).

17.   As per claims 5, 13 and 19, Fayyad teaches "adding a first approximation having

a first lower bound dmin1 to the candidate set if dmin1 < k-NNdist (q), wherein k-NNdist

(q) is the kth largest distance between the query vector q and nearest neighbor vectors

p." Fayyad and Oregon University does not teach explicitly using vectors in nearest

neighbor search. However, Staats teaches for determining the nearest neighbor of a

data vector. (Figs. 2 & 4, col. 6, lines 62-67 to col. 7, lines 1-36). Thus, it would have

been obvious to one of ordinary skill in the data processing art at the time of the

invention decide to incorporate the teachings of the cited references because the

process of determining the nearest neighbor of a data vector by Staats's would have

provided Fayyad's with necessary method, which is more efficient vector quantizers to

use efficient search technique (see Staats, col. 2, lines 11-12). Further by combining

Staats method would have allowed Fayyad's method to determine the closest vector

quantization to the input vector using tree searched vector quantization codebook (see

Staats, col. 2, lines 4-6).

18.   As per dependent claims 6, 14 and 20, Staats teaches "using the candidate set

to return "k" nearest neighbors vectors p to the query vector q." at Figs. 5, col. 8,

lines 62-67.

19.   As per dependent claims 7 and 21, Staats teaches "not all vectors p

corresponding to approximations in the candidate set are examined to return the 'k'

nearest neighbors." at Figs. 5, col. 9, lines 1-4.

Response to Arguments

20.   Applicant's arguments with respect to claims 1-24 have been considered but are

moot in view of the new ground(s) of rejection and details as follows:

A)   Appellants' argument regarding Claims 1-4, 8-12, 15-18, and 22-24, stated

in the Appeal Brief (Paper# 14) as "Fayyad et al., Staats and Apple Computers

Paper Fails to Disclose "Polar Coordinates."

In response to Appellants' argument, Examiner disagrees because the

new reference of Oregon University teaches use of "polar coordinates". Polar

coordinate system is used for shapes that have symmetry about a point. Polar

coordinate system deals with a radius and an angle, (used to draw circles) (see

Oregon University teaches converting Cartesian to Polar coordinates and vice

versa). Cartesian coordinates system is well known and used on computer

screens to draw all graphics. In order to draw polar coordinates on computer

screen, it is well known that the coordinates have to be converted into Cartesian

coordinates and the formulas used are:

X Coordinate = radius * Cosine(angle)

Y Coordinate = radius * Sine(angle)

The invention deals with computers in querying a database for nearest-neighbor

using polar coordinates.

B)   Appellants' argument stated as "Why the prior art motivates one to convert

or change Fayyad et al.'s Cartesian system to polar. Indeed, no proffer of why a

reasonable expectation of success exists in converting Fayyad et al.'s invention

to polar has been made. As it is simply converting Fayyad et al.'s Cartesian

system to polar would destroy the efficacy of its equations to execute nearest

neighbor searches."

In response to Appellants' argument, Examiner states that the claimed

invention is the same as prior art except using a different coordinate system (see

Fayyad at Figs. 7 & 8, col. 7, lines 55-67 to col. 8, lines 1-14 and Figs. 2B, col. 4,

lines 55-67 to col. 5, lines 1-3) and in order to achieve in the required

(appellant's) polar coordinate system a well-known conversion method is

suggested (see at Oregon University teaches converting Cartesian to Polar

coordinates and vice versa).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sathyanarayan Pannala whose telephone number is (703) 305-3390. The examiner can normally be reached on 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (703) 305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sathyanarayan Pannala
Examiner
Art Unit 2177

srp
August 20, 2004

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